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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Appln. of:	Hanan Kupferman	Serial No.:	10/815,508
Patent No.:	7,023,639 B1	Filing Date:	03/31/2004
Issue Date:	04/04/2006	Examiner:	Dismery E. Mercedes
For: SERVO SYNCHRONIZATION VALIDATION TECHNIQUES BASED ON BOTH SERVO SYNCH MARKS AND WEDGE IDENTIFIERS IN A ROTATING MEDIA STORAGE DEVICE		Docket No.:	K35A1431

REQUEST FOR CERTIFICATE OF CORRECTION PURSUANT TO 35 U.S.C. § 254

ATTN: Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Arlington, VA 22313-1450

Certificate
NOV 21 2006
of Correction

Dear Sir/Madam:

The following errors were noted in the above-referenced patent. Applicant hereby requests that the Commissioner issue a Certificate of Correction, without charge.

In the Claims:

Col. 9, Line 53 (Claim 9): Please delete "TD" and insert --ID-- therefor.

Col. 10, Line 27 (Claim 16): Please delete "inode" and insert --mode-- therefor. Attached as Exhibit A is a copy of the amendment filed 11/4/2005, which shows the correct wording of original Claims 9 and 16.

NOV 21 2006

A Certificate of Correction (PTO/SB/44) is enclosed. No fee is believed to be due. However, the Commissioner is hereby authorized to charge payment of any required fees associated with this communication or credit any overpayment to Deposit Account No. 23-1209.

Respectfully submitted,

Date: November 13, 2006

By: _____
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PTO/SB/44 (04-05)
Approved for use through 04/30/2007. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,023,639 B1

APPLICATION NO.: 10/815,508

ISSUE DATE : April 4, 2006

INVENTOR(S) : Hanan Kupferman

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Col. 9, Line 53: Delete "TD" and insert --ID-- therefor.

Col. 10, Line 27: Delete "inode" and insert --mode-- therefor.

MAILING ADDRESS OF SENDER (Please do not use customer number below):
WESTERN DIGITAL TECHNOLOGIES, INC.
Attn: Docketing, Location E118-G
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EXHIBIT A

COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application. No.	:	10/815,508	Confirmation No. 8222
Applicant	:	Hanan Kupferman	
Filed	:	3/31/2004	
TC/A.U.	:	2651	
Examiner	:	Dismery E. Mercedes	
Docket No.	:	K35A1431 005575.P031	
Customer No.	:	8791	

Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450

AMENDMENT

Sir:

In response to the Office Action of August 11, 2005, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A rotating media storage device (RMSD) connectable to a host, the RMSD comprising:

a moveable head to perform track following;

a disk having a circumferential track, the circumferential track having a plurality of embedded servo wedges utilized in track following, the plurality of wedges being spaced sequentially around a circumference of the circumferential track; and

a synch mark detection circuit having a first detection mode and a second detection mode, wherein, in the first detection mode, the synch mark detection circuit detects a servo synchronization signal based on the head reading a servo synchronization mark (SSM) of a servo header of an embedded servo wedge,

wherein, in the second detection mode, the synch mark detection circuit detects a servo synchronization signal based on the head reading a SSM and a wedge identifier (ID) of a servo header of an embedded servo wedge, the wedge ID being utilized in conjunction with the SSM to validate the servo synchronization signal.

2. (Original) The RMSD of claim 1, wherein a substantial majority of the plurality of embedded servo wedges each include a servo header having a concatenated SSM and wedge ID for detecting a servo synchronization signal when read by the head.

3. (Original) The RMSD of claim 2, wherein the concatenated SSM and wedge ID is located adjacent to a phase lock loop (PLL) field.

4. (Original) The RMSD of claim 3, wherein the concatenated SSM and wedge ID is located adjacent to a track identification field (TKID).

5. (Original) The RMSD of claim 1, wherein the synch mark detection circuit to further,
receive a first SSM and a first wedge ID; and
decode the first SSM and the first wedge ID.

6. (Original) The RMSD of claim 5, wherein the synch mark detection circuit to further,
receive a second SSM and a second wedge ID;
decode the second SSM and the second wedge ID; and
determine if the second wedge ID has incremented at an expected rate.

7. (Original) The RMSD of claim 6, wherein, if the second wedge ID has incremented at an expected rate in comparison to the first wedge ID, the synch mark detection circuit to declare a hard servo synchronization mode based upon a forecasted wedge ID pattern.

8. (Original) The RMSD of claim 7, wherein the hard servo synchronization mode based upon the forecasted wedge ID pattern includes performing servo synchronization based upon determining that subsequent wedge IDs of subsequent servo headers include accurately forecasted wedge ID numbers based upon the forecasted wedge ID pattern.

9. (Original) In a rotating media storage device (RMSD) connectable to a host, the RMSD including a disk having a circumferential track with a plurality of embedded servo wedges utilized in track following, the plurality of wedges being spaced sequentially around a circumference of the circumferential track, and a moveable head to perform track following, a method for performing servo synchronization comprising:

detecting a servo synchronization signal in a first mode based on the head reading a first servo synchronization mark (SSM) of a servo header of an embedded servo wedge;

detecting a servo synchronization signal in a second mode based on the head reading a first SSM and a first wedge identifier (ID) of a first servo header of an embedded servo wedge,

the first wedge ID being utilized in conjunction with the first SSM to validate the servo synchronization signal, and in the second detection mode,

determining if a second wedge ID of a second servo header has incremented at an expected rate in comparison to the first wedge ID of the first servo header; and

declaring a hard servo synchronization mode based upon a forecasted wedge ID pattern.

10. (Original) The method of claim 9, wherein a substantial majority of the plurality of embedded servo wedges each include a servo header having a concatenated SSM and wedge ID for detecting a servo synchronization signal when read by the head.

11. (Original) The method of claim 10, wherein the concatenated SSM and wedge ID is located adjacent to a phase lock loop (PLL) field.

12. (Original) The method of claim 11, wherein the concatenated SSM and wedge ID is located adjacent to a track identification field (TKID).

13. (Original) The method of claim 9, further comprising:
detecting a first SSM and a first wedge ID; and
decoding the first SSM and the first wedge ID.

14. (Original) The method of claim 13, further comprising:
detecting a second SSM and a second wedge ID;
decoding the second SSM and the second wedge ID; and
determining if the second wedge ID has incremented at the expected rate.

15. (Original) The method of claim 14, wherein the hard servo synchronization mode based upon the forecasted wedge ID pattern includes performing servo synchronization based upon determining that subsequent wedge IDs of subsequent servo headers include accurately forecasted wedge ID numbers based upon the forecasted wedge ID pattern.

16. (Original) A computer system comprising a host computer and a rotating media storage device (RMSD), the RMSD comprising:

a moveable head to perform track following; and

a disk having a circumferential track, the circumferential track having a plurality of embedded servo wedges utilized in track following, the plurality of wedges being spaced sequentially around a circumference of the circumferential track; and

a synch mark detection circuit having a first detection mode and a second detection mode, wherein, in the first detection mode, the synch mark detection circuit detects a servo synchronization signal based on the head reading a servo synchronization mark (SSM) of a servo header of an embedded servo wedge,

wherein, in the second detection mode, the synch mark detection circuit detects a servo synchronization signal based on the head reading a SSM and a wedge identifier (ID) of a servo header of an embedded servo wedge, the wedge ID being utilized in conjunction with the SSM to validate the servo synchronization signal.

17. (Original) The computer system of claim 16, wherein a substantial majority of the plurality of embedded servo wedges each include a servo header having a concatenated SSM and wedge ID for detecting a servo synchronization signal when read by the head.

18. (Original) The computer system of claim 17, wherein the concatenated SSM and wedge ID is located adjacent to a phase lock loop (PLL) field.

19. (Original) The computer system of claim 18, wherein the concatenated SSM and wedge ID is located adjacent to a track identification field (TKID).

20. (Original) The computer system of claim 16, wherein the synch mark detection circuit to further,

receive a first SSM and a first wedge ID; and

decode the first SSM and the first wedge ID.

21. (Original) The computer system of claim 20, wherein the synch mark detection circuit to further,

receive a second SSM and a second wedge ID;

decode the second SSM and the second wedge ID; and

determine if the second wedge ID has incremented at an expected rate.

22. (Original) The computer system of claim 21, wherein, if the second wedge ID has incremented at an expected rate in comparison to the first wedge ID, synch mark detection circuit to declare a hard servo synchronization mode based upon a forecasted wedge ID pattern.

23. (Original) The computer system of claim 21, wherein the hard servo synchronization mode based upon the forecasted wedge ID pattern includes performing servo synchronization based upon determining that subsequent wedge IDs of subsequent servo headers include accurately forecasted wedge ID numbers based upon the forecasted wedge ID pattern.

REMARKS/ARGUMENTS

The Examiner is thanked for the clarity and conciseness of the previous Office Action, and for the citation of references, which have been studied with interest and care.

This Amendment is in response to the Office Action mailed August 11, 2005. In the Office Action, claims 1-23 stand rejected under 35 U.S.C. § 103(a).

Reconsideration in light of the remarks made herein is respectfully requested.

Rejection Under 35 U.S.C. § 103

Claims 1-23 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious over U.S. Patent No. 6,411,452 issued to Cloke (hereinafter Cloke) in view of U.S. Patent No. 6,201,652 issued to Rezzi et al. (hereinafter Rezzi).

Applicant respectfully traverses the Office Action's § 103 obviousness rejections in their entirety in light of the following remarks. As stated in MPEP § 2141.03:

> A prima facie obviousness rejection requires the three basic criteria be met. First, there must be some teaching, suggestion, or motivation, either in the references of themselves, or in the knowledge generally available to one skilled in the art, to modify the reference or to combine the references. Second, there must be some reasonable expectation of success. Finally, the prior art reference, or references when combined, *must teach all the claim limitations.* The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, *and not based on the Applicant's disclosure*. MPEP §2141.03. (Emphasis added).

Applicant respectfully submits that a prima facie obviousness rejection has not been properly made by the Office Action because the combination of Cloke and Rezzi does not teach or suggest the claim limitations of Applicant's independent claims 1, 9, and 16.

For example, independent claims 1 and 16 recite claim limitations related to: a second detection mode...in which the synch mark detection circuit detects a servo synchronization signal based on the head reading a SSM and a wedge identifier (ID) of a servo header of an

embedded servo wedge...*the wedge ID being utilized in conjunction with the SSM to validate the servo synchronization signal.*

Similarly, independent claim 9 recites claim limitations related to: detecting a servo synchronization signal in a second mode based on the head reading a first SSM and a first wedge identifier (ID) of a first servo header of an embedded servo wedge...*the first wedge ID being utilized in conjunction with the first SSM to validate the servo synchronization signal...*

On page 2 of the Office Action, the Office Action states that although Cloke fails to disclose: wherein the synch mark detection circuit detects a servo synchronization signal based on the head reading a SSM and a wedge ID (or sector ID) of a servo header of an embedded servo wedge...the wedge ID being utilized in conjunction with the SSM to validate the servo synchronization; that this claim limitation is disclosed in Rezzi. In support of this, the Office action cites Figure 1 and reference numerals 12, 14, 16, 18.

The Office Action also cites column 4, lines 45-51 of Rezzi, which states:

> The encoded servo information signal may be detected by passing said encoded servo information through a Viterbi detector that has been modified to eliminate state changes that would be caused by the prohibited adjacent data state combinations. The act of encoding may be performed by encoding the Gray code using a 4:12 run-length code that satisfies a constraint wherein a number of 0's in a row cannot be more than 10 and less than 2. (Rezzi, column 4, lines 45-51).

Applicant respectfully submits that the Office Action has misconstrued the teachings of Rezzi and that Rezzi does not in fact teach or suggest these claim limitations. Applicant respectfully submits that nowhere does Rezzi teach or suggest *utilizing a wedge ID in conjunction with an SSM to validate a servo synchronization signal.*

As set forth in Rezzi, a servo synchronization mark (SSM) is used to mark the beginning of the Gray code field, and a bit by bit correlator is used to identify the SSM in order to begin the decoding of the Gray code...Typically, the SSM presents a reserved word 3 bytes in length that complies with certain code constraints...(Rezzi, column 5, lines 42-47).

More particularly, as set forth in Rezzi:

> The output from the modified servo Viterbi detector 38 is connected to a 12:4 detector 50, which provides an output on a nonreturn to zero (NRZ) encoded line 52. The output from the modified servo Viterbi detector 38 is additionally connected to the input of a servo sync mark detector 54, which provides a Sync Byte Detect (SBD) output 56, as well as an input to a servo sequencer 58...(column 6, line 64 – column 7, line 3)

Applicant respectfully submits that Rezzi does not teach or suggest *utilizing a wedge ID in conjunction with a SSM to validate the servo synchronization signal,* as set forth in Applicant's claim limitations. Instead, Rezzi uses an SSM detector 54 to detect an SSM, by itself, in order to validate a servo synchronization signal referred to as the Sync Byte Detect (SBD) output 56. Applicant can find no teaching or suggestion in Rezzi of *utilizing a wedge ID in conjunction with a SSM to validate the servo synchronization signal.*

It is clear from the teachings of Rezzi that the SSM by itself (as detected by the SSM detector 54) is used to mark the beginning of the Gray code encoded data, which includes the sector ID 18 and the track ID 20, such that the sector ID 18 and track ID 20 are read by the 12:4 decoder 50 to decode the encoded Gray coded sector ID and track ID. In this way, as set forth in the Field of the Invention: "improvements in methods for the detection of track and sector identification information in a Gray code containing field of a servo sector..." are provided.

Thus, as described above, Rezzi does not teach or suggest *the use of a wedge ID being utilized in conjunction with an SSM to validate a servo synchronization signal.*

Accordingly, the combination of Cloke and Rezzi does not teach or suggest the claim limitations of Applicant's independent claims 1, 9, and 16.

Therefore, Applicant respectfully requests that independent claims 1, 9, and 16 be allowed and passed to issuance. Further, Applicant respectfully requests that the claims that depend therefrom also be allowed and passed to issuance.

Conclusion

In view of the remarks made above, it is respectfully submitted that pending claims 1-23 define the subject invention over the prior art of record. Thus, Applicant respectfully submits that all the pending claims are in condition for allowance, and such action is earnestly solicited at the earliest possible date. The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application. To the extent necessary, a petition for an extension of time under 37 C.F.R. is hereby made. Please charge any shortage in fees in connection with the filing of this paper, including extension of time fees, to Deposit Account 02-2666 and please credit any excess fees to such account.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: November 4, 2005 By

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CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8A)

I hereby certify that this correspondence is, on the date shown below, being:

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Date: 11/04/2005

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11/04/2005

Tu Nguyen *Date*

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